## REMARKS

Claims 5-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,049,168 to Danielson ("Danielson '168"), including Claim 5, the sole pending independent claim. Applicants respectfully disagree with the Examiner's reliance on this reference as disclosing several claimed elements, and therefore request reconsideration of the rejections.

The present invention involves a method of operating a hydrogen test leak unit "used for calibrating leakage flow meters." (Specification at p. 1, paragraph [0002]) Being that the test leak unit is used in calibration activities, it is essential that the test leak unit be operated in a manner that provides a "high time constancy of the leak rate." (Specification at p. 1, paragraph [0004]) As disclosed in the Specification, prior art methods utilizing a gas mixture of hydrogen and nitrogen exhibit the property that the hydrogen, which has a higher permeation coefficient than nitrogen, "escapes more quickly from the chamber than nitrogen such that the nitrogen concentration in the chamber increases," (Specification at p. 1, paragraph [0003]) which, in turn, reduces the time constancy of the leak rate. In solving this problem in the art, Applicants have discovered that gases exhibiting permeation coefficients that are 50% to 200% of that of hydrogen relative to a given membrane material work to prevent demixing of the gases due to permeation, thereby offering a higher time constancy of the leak rate. Applicants have found that helium gas and even relatively large molecules, including but not limited to, $CO_2$, $CH_4$ and $C_2H_6$, offer permeation coefficients that, when mixed with hydrogen, extend the time constancy of the leak rate over that of a hydrogen and nitrogen mixture, thereby improving the functionality and useful life of the hydrogen test leak unit in calibrating leakage flow meters.

With regard to Claim 5, the Examiner argues that "[o]ne of ordinary skill in the art at the time of invention would have likely chosen a gas such as helium for such a task as it is ***the closest gas in molecular size to hydrogen and would simulate the permeability of hydrogen well***." Applicant respectfully submits that this argument fails to provide a rationale as to why a person of skill in the art would look to gases with permeation coefficients and molecular sizes very different from that of hydrogen as substitutes for nitrogen, as disclosed in the Specification identifying carbon dioxide, methane and ethane as suitable gases, and as expressed in the limitation of Claim 5 requiring "at least one

added gas wherein the added gas has a permeation coefficient (P) relative to the material of the membrane ranging between 50% and 200% of that of hydrogen." (Claim 5) As such, the Examiner has not shown why it would have been obvious for one of skill in the art to select gases with permeation coefficients relative to the material of the membrane ranging between 50% and 200% of that of hydrogen.

The only prior art cited by the Examiner, Danielson '168, fails to provide any disclosure regarding calibration of leakage flow meters, methods of using hydrogen test leak units, in particular the selection of gases to be mixed with hydrogen, or the selection of helium as a mix gas based on its permeability coefficient with respect to a given membrane material. In fact, Danielson '168 does not disclose the effect of changing the nitrogen concentration in the chamber that contains a hydrogen gas mixture, or even the use of a membrane material in the gas chamber. Instead, Danielson '168 discloses "a leak detection system that eliminates the need of expensive and complex throttling valve structure[s], while also enhancing the overall sensitivity of the system to probe gas, leak detection." (Danielson '168 at col. 2, lines 53-55) In doing so, the invention of Danielson '168 operates through a series of support pumps that are connected to the exhaust port of a molecular drag pump. (Danielson '168 at Figure 3) The fact that Danielson '168 "discusses the benefits of using helium for leak detection, teaching that due to its small molecular size even the tiniest holes or leaks can be detected," (August 20, 2008 Office Action at p. 3) has no relevance to selecting helium or any other gas as a mix gas in a hydrogen test leak unit because its permeability coefficient is between 50% and 200% of that of hydrogen for various membrane materials. As such, the Examiner's citation of Danielson '168 fails to support any rationale as to why the claimed test gas mixture of hydrogen and at least one added gas, wherein the added gas has a permeation coefficient relative to the material of the membrane ranging between 50% and 200% of that of hydrogen, would have been obvious at the time of invention.

Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness because the Examiner has failed to provide art that discloses a method for operating a hydrogen test leak unit that includes introducing a test gas mixture of hydrogen and at least one added gas wherein the added gas has a permeation coefficient relative to the material of the membrane ranging between 50% and 200% of

that of hydrogen, and because the Examiner has not provided a rationale as to why the selection of gases in the claimed range of permeation coefficients would have been obvious to one of skill in the art at the time of invention. Therefore, Applicants respectfully submit that Claim 5 is not rendered obvious by the prior art, and that Claim 5 is in allowable condition.

Furthermore, since "[d]ependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious," *In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988), Applicants request that the Examiner's rejection to dependent Claims 6-8, all of which depend from independent Claim 5, also be withdrawn. In view of these arguments, Applicants believe the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-0289, under Order No. 327_109 from which the undersigned is authorized to draw.

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Respectfully submitted,

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